



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

D4766-041
Job Sheet 199361



Part No: D4766-041

Job Qty: 1 pcs

Part Name: Skidtube Assembly



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 8/20/19

Job Tracking No:

Due Date: 8/30/19

Created By: Jason Leroux

Type: SOLD

Description:

Note: DWG REV E IPP REV:A 13.04.17 NEW ISSUE DD VERF:JLM IPP REV:B 13.08.08 PB2 DD VERF:JLM IPP REV:B 13.08.26 PB3 DD VERF:JLM IPP REV:C 13.11.14 AS PER DWG REV.B DD VERF:JLM IPP REV:D 15.06.10 AS PER DWG REV.C DD VERF:JLM IPP REV:E 16.03.23 AS PER DWG REV.D DD VERF:JLM

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard Setup Hrs	Run Hrs	Workcenter/Supplier	Lead Time	Sign-off
120	Skidtubes - 1	1 pcs	8/30/19		0.00	1.00	Skidtubes - 1		00
							Skidtubes - 2		
							Skidtubes - 3		
							Skidtubes - 4		
							Skidtubes - 5		02
							Skidtubes - 6		
							Skidtubes - 7		
140	QC 5	1 pcs	8/30/19		0.00	0.00	QC 5 - 10		
							QC 5 - 12		
							QC 5 - 17		
							QC 5 - 18		
							QC 5 - 19		
							QC 5 - 22		
							QC 5 - 24		
							QC 5 - 3		
							QC 5 - 43		
							QC 5 - 49		
							QC 5 - 51		
							QC 5 - 58		
							QC 5 - 68		SEP 05 2019 68
							QC 5 - 9		9-89
							QC 5 - 50		
							QC 5 - 30		
							QC 5 - 40		
							QC 5 - 61		
							QC 5 - 81		
150	Handfinish - 1-1 Chemical-B4B	1 pcs	8/30/19		0.00	0.62	Handfinish - 1 - 1 - B4B		
							Handfinish - 1 - 2 - B4B		
							Handfinish - 1 - 3 - B4B		SEP 05 2019
							Handfinish - 1 - 4 - B4B		



Container No: S211502



Part: D4766 - 041

Job No: 199361

Serial No/Batch: S211502

Revision:

Inspector:

Exp Date:

Instructions: Various STC's

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
CANADA
TEL: 1 813 632-6200
Email: sales@dartaero.com
www.dartaerospace.com

Date: 09/06/19

Plex 8/20/19 3:40 PM dart.leroux.jasor

				Handfinish - 1 - 5 - B4B	
				Handfinish - 1 - 6 - B4B	
				Handfinish - 1 - 7 - B4B	
				Handfinish - 1 - 8 - B4B	
				Handfinish - 1 - 9 - B4B	
				Handfinish - 1 - 10 - B4B	
				Handfinish - 1 - 11 - B4B	
				Handfinish - 1 - 12 - B4B	
				Handfinish - 1 - 13 - B4B	
				Handfinish - 1 - 14 - B4B	
				Handfinish - 1 - 15 - B4B	
				Handfinish - 1 - 16 - B4B	
				Handfinish - 1 - 17 - B4B	
				Handfinish - 1 - 18 - B4B	
				Handfinish - 1 - 19 - B4B	
				Handfinish - 1 - 20 - B4B	
				Handfinish - 1 - 21 - B4B	
				Handfinish - 1 - 22 - B4B	
160 QC 7	1	8/30/19	0.00 0.00	QC 7 - 10	
	pcs			QC 7 - 13	
				QC 7 - 14	
				QC 7 - 15	
				QC 7 - 17	
				QC 7 - 18	
				QC 7 - 19	
				QC 7 - 2	
				QC 7 - 28	
				QC 7 - 3	
				QC 7 - 30	
				QC 7 - 34	
				QC 7 - 36	
				QC 7 - 37	
				QC 7 - 41	
				QC 7 - 47	
				QC 7 - 48	
				QC 7 - 51	
				QC 7 - 58	
				QC 7 - 59	
				QC 7 - 60	
				QC 7 - 9	
				QC 7 - 68	
				QC 7 - 50	
				QC 7 - 67	
				QC 7 - 40	
				QC 7 - 24	
				QC 7 - 43	
				QC 7 - 61	
				QC 7 - 81	

170	Skidtubes - 3 - B4B	1 pcs	8/30/19	0.00 1.72	Skidtubes - 1 - B4B	DD
					Skidtubes - 2 - B4B	
					Skidtubes - 3 - B4B	
					Skidtubes - 4 - B4B	
					Skidtubes - 5 - B4B	
					Skidtubes - 6 - B4B	
					Skidtubes - 7 - B4B	
180	QC 5	1 pcs	8/30/19	0.00 0.00	QC 5 - 10	
					QC 5 - 12	
					QC 5 - 17	
					QC 5 - 18	BE
					QC 5 - 19	
					QC 5 - 22	
					QC 5 - 24	
					QC 5 - 3	
					QC 5 - 43	
					QC 5 - 49	
					QC 5 - 51	
					QC 5 - 58	
					QC 5 - 68	
					QC 5 - 9	
					QC 5 - 50	
					QC 5 - 30	
					QC 5 - 40	
					QC 5 - 61	
					QC 5 - 81	
185	Skidtubes - 4 - B4B	1 pcs	8/30/19	0.00 3.44	Skidtubes - 1 - B4B	
					Skidtubes - 2 - B4B	
					Skidtubes - 3 - B4B	MGA
					Skidtubes - 4 - B4B	TF
					Skidtubes - 5 - B4B	
					Skidtubes - 6 - B4B	
					Skidtubes - 7 - B4B	
188	QC 5	1 pcs	8/30/19	0.00 0.00	QC 5 - 10	
					QC 5 - 12	
					QC 5 - 17	
					QC 5 - 18	
					QC 5 - 19	
					QC 5 - 22	
					QC 5 - 24	
					QC 5 - 3	
					QC 5 - 43	
					QC 5 - 49	
					QC 5 - 51	
					QC 5 - 58	
					QC 5 - 68	
					QC 5 - 9	
					QC 5 - 50	
					QC 5 - 30	
					QC 5 - 40	
					QC 5 - 61	
					QC 5 - 81	
210	Handfinish - 2-1 Pressure-B4B	1 pcs	8/30/19	0.00 0.62	Handfinish - 2 - 1 - B4B	
					Handfinish - 2 - 2 - B4B	
					Handfinish - 2 - 3 - B4B	
					Handfinish - 2 - 4 - B4B	
220	Spray Paint - 2 - B4B	1 pcs	8/30/19	0.00 0.78	Spray Paint - 1 - B4B	
					Spray Paint - 2 - B4B	
					Spray Paint - 3 - B4B	

230	QC 14	1 pcs	8/30/19	0.00 0.00	Spray Paint - 4 - B4B	
					QC 14 - 15	
					QC 14 - 2	
					QC 14 - 34	
					QC 14 - 41	
					QC 14 - 51	
					QC 14 - 58	
					QC 14 - 59	
					QC 14 - 9	
					QC 14 - 68	
					QC 14 - 40	
					QC 14 - 19	
					QC 14 - 43	
					QC 14 - 24	
					QC 14 - 61	
					QC 14 - 81	
260	Handfinish - 4-1-Assembly-B4B	1 pcs	8/30/19	0.00 0.62	Handfinish - 4 - 1 - B4B	
					Handfinish - 4 - 10 - B4B	
					Handfinish - 4 - 11 - B4B	
					Handfinish - 4 - 12 - B4B	
					Handfinish - 4 - 13 - B4B	
					Handfinish - 4 - 14 - B4B	
					Handfinish - 4 - 15 - B4B	
					Handfinish - 4 - 2 - B4B	
					Handfinish - 4 - 3 - B4B	
					Handfinish - 4 - 4 - B4B	
					Handfinish - 4 - 5 - B4B	
					Handfinish - 4 - 6 - B4B	
					Handfinish - 4 - 7 - B4B	
					Handfinish - 4 - 8 - B4B	
					Handfinish - 4 - 9 - B4B	
270	QC 5	1 pcs	8/30/19	0.00 0.00	QC 5 - 10	
					QC 5 - 12	
					QC 5 - 17	
					QC 5 - 18	
					QC 5 - 19	
					QC 5 - 22	
					QC 5 - 24	
					QC 5 - 3	
					QC 5 - 43	
					QC 5 - 49	
					QC 5 - 51	
					QC 5 - 58	
					QC 5 - 68	
					QC 5 - 9	
					QC 5 - 50	
					QC 5 - 30	
					QC 5 - 40	
					QC 5 - 61	
					QC 5 - 81	
300	Packaging 3-1 - Stock - B4B	1 pcs	8/30/19	0.00 0.00	Packaging 3 - 1 - B4B	
					Packaging 3 - 2 - B4B	
					Packaging 3 - 3 - B4B	
					Packaging 3 - 4 - B4B	

				Packaging 3 - 5 - B4B	
				Packaging 3 - 6 - B4B	
				Packaging 3 - 7 - B4B	
				Packaging 3 - 8 - B4B	
				Packaging 3 - 9 - B4B	
				Packaging 3 - 10 - B4B	
				Packaging 3 - 11 - B4B	
				Packaging 3 - 12 - B4B	
				Packaging 3 - 13 - B4B	
				Packaging 3 - 14 - B4B	
				Packaging 3 - 15 - B4B	
				Packaging 3 - 16 - B4B	
				Packaging 3 - 17 - B4B	
				Packaging 3 - 18 - B4B	
				Packaging 3 - 19 - B4B	
				Packaging 3 - 20 - B4B	
				Packaging 3 - 21 - B4B	
				Packaging 3 - 22 - B4B	
				Packaging 3 - 23 - B4B	
				Packaging 3 - 24 - B4B	
				Packaging 3 - 25 - B4B	
				Packaging 3 - 26 - B4B	
				Packaging 3 - 27 - B4B	
				Packaging 3 - 28 - B4B	
				Packaging 3 - 29 - B4B	
				Packaging 3 - 30 - B4B	
				Packaging 3 - 31 - B4B	
				Packaging 3 - 32 - B4B	
				Packaging 3 - 33 - B4B	
				Packaging 3 - 34 - B4B	
				Packaging 3 - 35 - B4B	
				Packaging 3 - 36 - B4B	
310 QC 21 - SA	1 pcs	8/30/19	0.00 0.00	QC 21 - SA - 21	
				QC 21 - SA - 70	
				QC 21 - SA - 53	

Part Op 120 - Skid tubes -1- Cut Aft end as per dwg D4766 2- Deburr ends 3-Drill Aft & Fwd Cap holes using DT8678 & Descriptions: DT8901***DO NOT OPEN AFT CAP HOLES*** 4- Locate DT Pilot Drill all X-Bolt holes using #30" drill. & Drill Ground wire hole on top of Tube. 5-Drill holes for D5520-1 doubler using DT10309 A & B, locating from 7th and 8th crossbolt holes from aft using .1875 clekos. Spot drill tube using #20 drill (note 10). Remove DT10309 B. Re-install DT 10309 A drill thru tube and doubler using #20 drill (note 10), cleko as you go. Remove .1875 clekos and open holes in tube and doubler to 0.750". Remove doublers and identify orientation. 6-Countersink rivet holes in skid tube detail M ***NOTE*** 29 places only. 6- Open ground wire hole .297" section D-D (1) place and detail "I" (2) place. 7- Open Aft & Fwd Cap holes using 0.208" drill. 8- Deburr holes. 9-Touch up alodine on D5520-1 doublers.

140 - QC5- Inspect part completeness to step on W/O

150 - Chemical Conversion Coat per QSI005 4.1

160 - QC7-Inspect Chemical Conversion Coat

170 - 1-Install doublers using DT10309 B. Shave rivets as required. Detail M. 2- Bond web as per Dwg D4766 & QSI 015 A/R 241 Sike Flex Batch: 5260625 Exp Date: 07/25/2020 start time: _____ end time: _____

***NOTE, 35.9" FROM AFT END AS PER DWG D4766. SHEET 6

180 - QC5- Inspect part completeness to step on W/O

185 - Skid tubes - 1- Bend aft tube as per dwg VERIFY HEIGHT and record: 8.5 2- Remove bending mark and mark center line on end of tube 3- Drill AFT float holes using DT _____ A,B,C. 4- Open X-Bolt holes to size as per Dwg D4766 and detail K 5- Drill Rivet Holes as per Dwg D4766 Using DT10065 6- Deburr Rivet holes & 0.750" holes and touch up alodine rivet holes only. 7- Seal all faying surfaces using proseal and rivet Doubler as per Dwg D4766. A/R Proseal Batch: _____ 12H CURE TIME START TIME: _____ NOTE: SHAVE RIVET

AFTER 12HRS CURE TIME. 8- Ream holes to finish size and Swage x-bolt spacers as per Dwg D4766 and section C-C 9- Trim/Grind flush per QSI 002 10- Swage x-bolt spacer as per dwg D4766 section G-G. Trim and grind flush. Open thru holes 0.625". 11- Deburr and blow out chips from inside of tube.

188 - QC5- Inspect part completeness to step on W/O

210 - Pressure Wash per QSI005 4.3/ Clean and remove all markings - Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch.

220 - Spray Paint / NDT Room - 1- Apply Primer as per QSI 005 4.2.1.3.3 and dwg A/R Primer

Batch: _____ 2- Paint White as per QSI 005 4.2.2.4 and dwg A/R Paint Batch: _____

230 - QC14- Inspect Spray Paint

260 - 1- Install Ground Wire inserts as per Dwg D4766. 2-Inspect for Foreign objects 3-Wet Install hose shield D5534-1 section P-P and note 12. A/R Proseal Batch: _____ 12H CURE TIME START
 TIME: _____ NOTE: SHAVE RIVET AFTER 12HRS CURE TIME. 4- Install Fwd & Aft caps as per Dwg D4766 and Detail "A" & "B". Fastener must be install wet as per note (9). A/R 241 Sika Flex Batch: _____
 Exp Date: _____ 5- Wing Walk as per Dwg D4766 and QSI 005 4.4 Batch: _____
 270 - QC5- Inspect part completeness to step on W/O
 300 - Identify as per dwg & Stock Location:
 310 - QC21- Final Inspection - Work Order Release

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D4766-041-BENT	Extrusion Bent	1 pcs (1 ea)	120-Skidtubes - 1	5207351
D5520-1	Doubler	2 pcs (2 ea)	120-Skidtubes - 1	5172448
CR3212-5-05	Rivet	58 pcs (58 ea)	170-Skidtubes - 3 - B4B	5155507
CR3213-5-06	Cherry Rivet	10 Ea (10 ea)	170-Skidtubes - 3 - B4B	
D5085-1	Web	1 pcs (1 ea)	170-Skidtubes - 3 - B4B	5212711
D5534-1	Hose Shield	2 pcs (2 ea)	170-Skidtubes - 3 - B4B	
D2973	Cross Bolt Spacer	2 pcs (2 ea)	185-Skidtubes - 4 - B4B	
D4686-1	Spacer	11 pcs (11 ea)	185-Skidtubes - 4 - B4B	
D4753-1	Doubler	22 pcs (22 ea)	185-Skidtubes - 4 - B4B	
D5304-1	Crossbolt Spacer	2 pcs (2 ea)	185-Skidtubes - 4 - B4B	
MS20601-AD4W3	Rivet	44 Ea (44 ea)	185-Skidtubes - 4 - B4B	
AELS-1032-130	Rivnut	3 Ea (3 ea)	260-Handfinish - 4-1-Assembly-B4B	
AN3C4A	Bolt	3 Ea (3 ea)	260-Handfinish - 4-1-Assembly-B4B	
AN3C5A	Bolt	2 Ea (2 ea)	260-Handfinish - 4-1-Assembly-B4B	
AN526C1032R10	Screw	2 Ea (2 ea)	260-Handfinish - 4-1-Assembly-B4B	
D2965	Cap	1 pcs (1 ea)	260-Handfinish - 4-1-Assembly-B4B	
D2965-3	Cap	1 pcs (1 ea)	260-Handfinish - 4-1-Assembly-B4B	
NAS1149C0332R	Washer (AN960C10L)	5 Ea (5 ea)	260-Handfinish - 4-1-Assembly-B4B	

Job Allocations

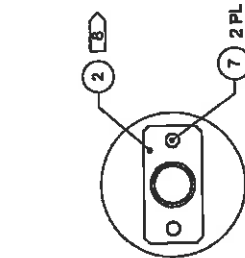
Operation	Component Part	Required	Inventory	Allocated
120-Skidtubes - 1	D4766-041-BENT	1	1	0
	D5520-1	2	16	0
170-Skidtubes - 3 - B4B	CR3212-5-05	58	670	0
	CR3213-5-06	10	59	0
	D5085-1	1	1	0
	D5534-1	2	0	0
185-Skidtubes - 4 - B4B	D2973	2	18	0
	D4686-1	11	21	0
	D4753-1	22	22	0
	D5304-1	2	17	0
	MS20601-AD4W3	44	170	0
260-Handfinish - 4-1-Assembly-B4B	AELS-1032-130	3	55	0
	AN3C4A	3	880	0
	AN3C5A	2	862	0
	AN526C1032R10	2	69	0
	D2965	1	55	0
	D2965-3	1	45	0
	NAS1149C0332R	5	2,694	0

Part Specifications

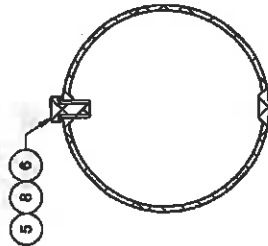
Specifications could not be found.

Plex 8/20/19 3:40 PM dart.leroux.jason

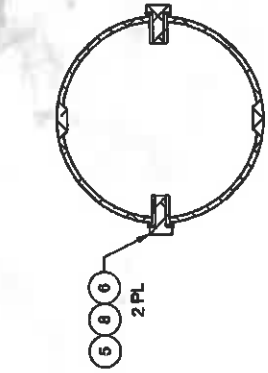
ITEM	QTY	PIN	DESCRIPTION
1	X	D4766-043	SKIDTUBE SUB ASSY
2	11	D4686-1	SPACER
3	22	D4753-1	DOUBLER
4	1	D4768-045	SKIDTUBE SUB ASSY
5	2	D5304-1	CROSSBOLT SPACER
6	3	AE15-1032-130	INSERT
7	3	AN3CA4	BOLT
8	44	MS20601AD4W3	RIVET, BLIND, CSK
9	3	NAS1146C0332R	WASHER



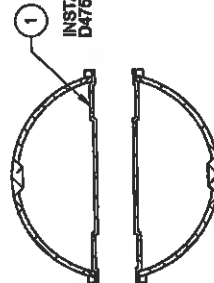
DETAIL E
SCALE 8X
22 PL



SECTION D-D
SCALE 8X



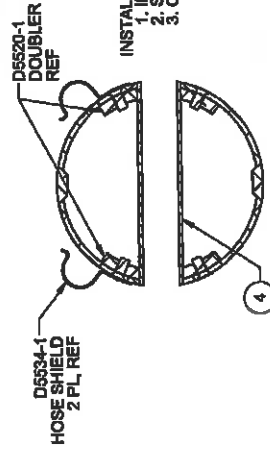
SECTION F-F
SCALE 8X



SECTION C-C
SCALE 8X
11 PL

INSTALL D4686-1 SPACER AFTER INSTALLING
D4763-1 DOUBLERS AS FOLLOWS (11 PL)

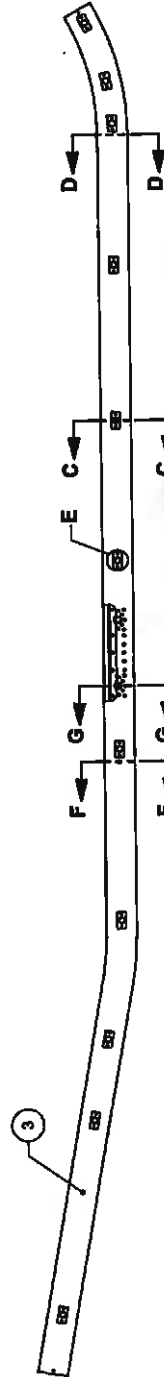
1. INSERT D4686-1 SPACER
2. SWAGE TO $\phi 0.650 \pm 0.010/-0.000$ X 1.0 DEEP PER QSI 002
3. TRIM/GRIND FLUSH PER QSI 002



SECTION G-G
SCALE 8X
2 PL

INSTALL D5304-1 SPACER AS FOLLOWS (2 PL)

1. INSERT D5304-1 SPACER
2. SWAGE TO $\phi 0.655 \pm 0.005/-0.000$ X 1.0 DP PER QSI 002
3. OPEN THRU HOLE TO $\phi 0.826$



D4766-043 SKIDTUBE SUB ASSY /A

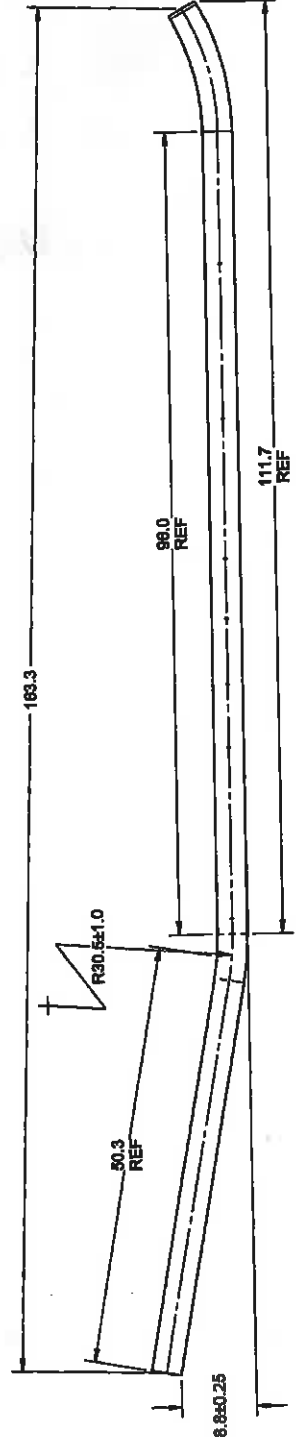
- NOTES:
- 1) MATERIAL: N/A
 - 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: N/A
 - 6) IDENTIFICATION: NONE
 - 7) WEIGHT: 33.9 lbs
 - 8) SEAL FAYING SURFACES USING PROSEAL P/S 980/1422 OR MIL-S-9802 CLASS B2 SEALANT

DESIGN	AP	AP	DART AEROSPACE USA, INC.
DRAWN	AJS	ML	EUGENE, OR
CHECKED	ML	DP	DRAWING NO. D4766
MFG. APPR.	DP	WM	REV. E
APPROVED	WM	DS	SHEET 3 OF 7
DE APPR.	DS	NTS	SCALE
DATE	17.03.30		TITLE SKIDTUBE

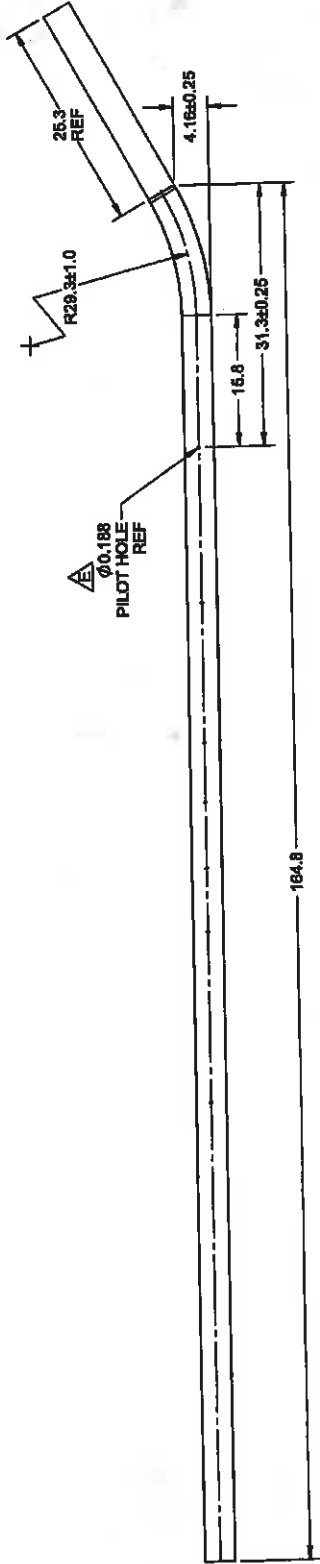
RELEASED
2017-08-11
APPROVED

Copyright © 2013 by DART Aerospace USA, Inc.
This document is the property of DART Aerospace USA, Inc. and is not to be distributed outside the company without written permission.

1 2 3 4 5 6 7 8



D4768-045 SKIDTUBE SUB ASSY
(BENDING DETAIL, AFT BEND)



D4768-045 SKIDTUBE SUB ASSY
(BENDING DETAIL, FWD BEND)

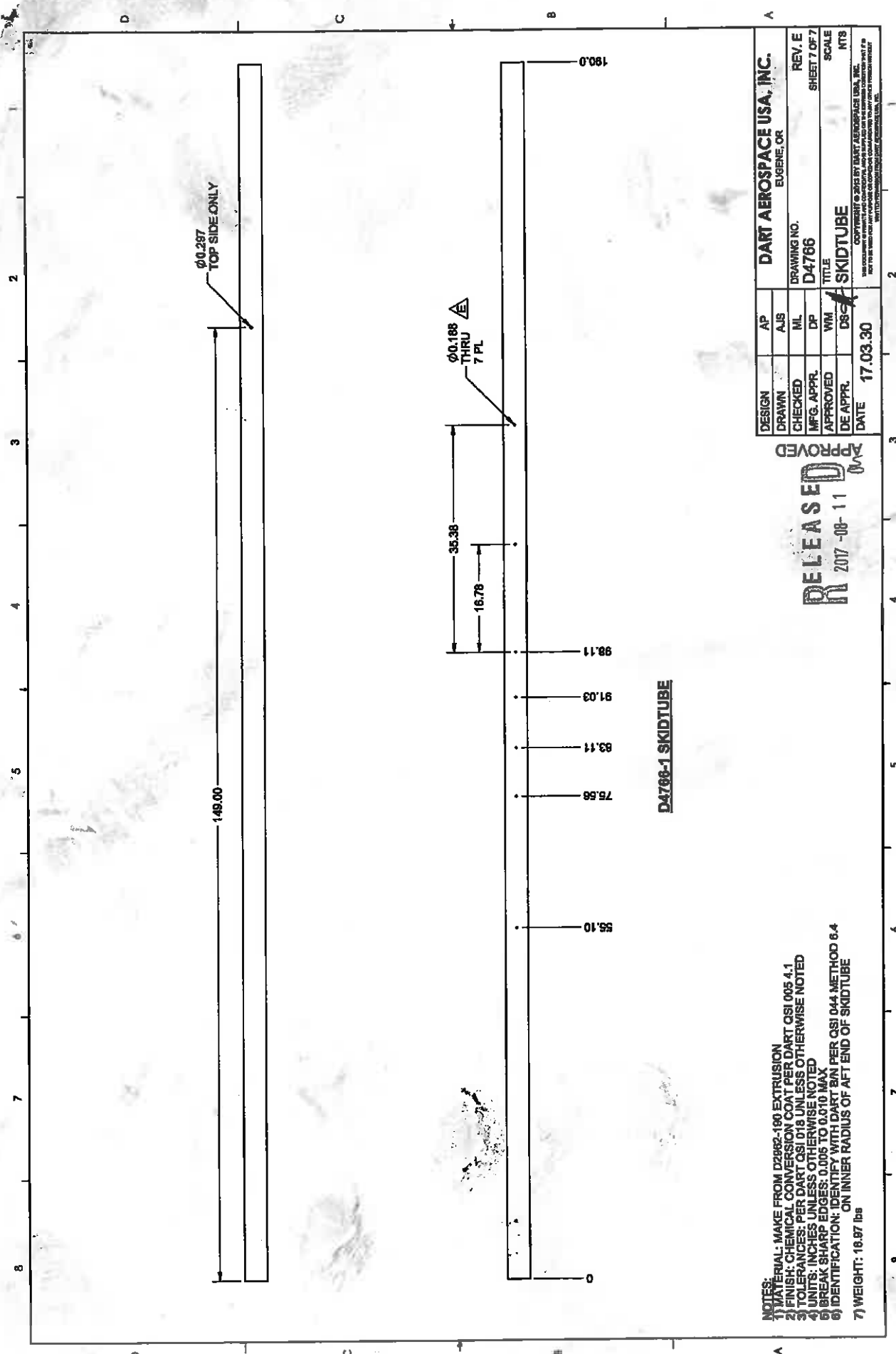
DESIGN				DART AEROSPACE USA, INC.			
DRAWN	AP	AJS		EUGENE, OR			
CHECKED		ML					
INFO. APPR.		DP					
APPROVED		WM					
DE APPR.		DS					
DATE	17.03.30						

RELEASED
2017-08-11
APPROVED

DRAWING NO.	REV. E
D4768	SHEET 5 OF 7
TITLE	SCALE
SKIDTUBE	NTS

Copyright © 2013 by DART Aerospace USA, Inc.
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without prior written permission from DART Aerospace USA, Inc.

1 2 3 4 5 6 7 8



DESIGN	AP	DART AEROSPACE USA, INC.	
DRAWN	AJS	EUGENE, OR	
CHECKED	ML	DRAWING NO.	REV. E
MFG. APPR.	DP	D4766	SHEET 7 OF 7
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	SKIDTUBE	NTS
DATE	17.03.30	COPYRIGHT © 2013 BY DART AEROSPACE USA, INC.	

NOTES:

- 1) MATERIAL: MAKE FROM D2962-180 EXTRUSION
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY WITH DART BIN PER QSI 044 METHOD 6.4 ON INNER RADIUS OF AFT END OF SKIDTUBE
- 7) WEIGHT: 16.97 lbs

RELEASED
R 2017-08-11



Entered: _____ Date: _____

WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐

Job: _____		DISPOSITION		DEPARTMENT/PROCESS					
Part No. _____		Rework ☐ Scrap ☒ Use-as-is ☐		Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☒ Water Jet ☐ Supplier ☐ Quality ☐					
Date: SEP 18 2019	Sequence #: 185	QTY Affected: 1		MRB (DS1042) 68 9-89 SEP 18 2019					
Description Work Order Deviation		Disposition							
- PART MANUFACTURED TO WRONG REVISION LEVEL.		SCRAP							
Completed By		Lead hand / Supervisor [Signature] 19-09-18							
QC / QA Coordinator		68 9-89 SEP 18 2019							
Root Cause		FAULT CATEGORY							
Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Preservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☒		Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled ☐ Other/Details: _____		Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐		Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐		Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☒ Finish ☐ Part Lost/Missing ☐ Misread ☐	